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Amplifier Design and Subsystem Trade-Off Studies*

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Abstract

We will discuss the design process for the National Ignition Facility (NIF) laser amplifiers. Topics will include calculations with shaped reflectors using both the 2D+ and 3D codes. Comparisons with experimental results will be presented, including the most recent results using shaped reflectors in the modified Beamlet amplifier.

The gain and phase distortion profiles calculated with these tools are integral to our design of the NIF Laser and our preduction of its performance. Sensitivity to variations from thse calculated values has been studied using the 2D Fourier propagation code PROP92 and the Bespalov-Talinov Model BT-Gain. We will detail the variations in an average gain, gain profile, phase distortion profile, and component losses within which NIF will meet its mission specifications.

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